

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): Device for providing spongy bone with bone substitute and/or bone reinforcing material, wherein:

~~wherein~~ at least one perforating device (4) is provided for making at least one hole (5) in the spongy bone (1), and

~~wherein~~ at least one flushing or rinsing device (6) is provided for flushing or rinsing the hole (5) with a rinsing agent (7),

~~characterized in~~

~~that~~ at least one vacuum source (9) is provided for generating a vacuum in the hole (5) in the spongy bone (1) for sucking and/or facilitating insertion or feeding of the bone substitute and/or bone reinforcing material (3) into said spongy bone (1).

Claim 2 (Currently Amended): Device according to claim 1, ~~characterized in that~~ wherein the vacuum source (9) is provided to generate a vacuum in the hole (5) of the spongy bone (1) such that the bone substitute and/or bone reinforcing material (3) is sucked into said hole (5) and distributed therein.

Claim 3 (Currently Amended): Device according to ~~claim 1 or 2~~
~~characterized in that~~ claim 1, wherein the vacuum source (9) is provided to generate a vacuum in the hole (5) of the spongy bone (1) such that the bone substitute and/or bone reinforcing material (3) is sucked into said hole (5) and distributed therein without substantial portions thereof being sucked out of the hole (5).

Claim 4 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the vacuum source (9) is provided to suck tissue material out of the hole (5) of the spongy bone (1) before bone substitute and/or bone reinforcing material (3) is sucked into the spongy bone (1).

Claim 5 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein a collecting device (27) is provided to collect tissue material which by the vacuum source (9) has been sucked out of the hole (5) of the spongy bone (1) for preventing tissue material from being sucked into the vacuum source (9) and/or into a monomer filter (28) and/or into a bacteria filter (29).

Claim 6 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein a monomer filter (28) is provided for preventing poisonous gases, which are generated during production of bone substitute and/or bone reinforcing material (3) from being discharged into the surroundings.

Claim 7 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein a bacteria filter (29) is provided for
preventing bacteria from getting into the hole (5) of the spongy bone (1) if a
connection between the vacuum source (9) and the spongy bone (1) is opened
unintentionally.

Claim 8 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein a non-return valve device (26) is
provided to prevent tissue material and/or any other material and/or bacteria from
being sucked into the hole (5) of the spongy bone (1) if the connection between the
vacuum source (9) and the hole (5) in the spongy bone (1) is opened unintentionally.

Claim 9 (Currently Amended): Device according to ~~claims 5 and 8,~~
~~characterized in that~~ claim 5, wherein the non-return valve device (26) is
located between the hole (5) in the spongy bone (1) and the collecting device (27).

Claim 10 (Currently Amended): Device according to ~~any of claims 5-9,~~
~~characterized in that~~ claim 5, wherein the non-return valve device (26) is
located between the monomer filter (28) and/or bacteria filter (29) and the hole (5) in
the spongy bone (1).

Claim 11 (Currently Amended): Device according to ~~any preceding claim, characterized in that~~ claim 1, wherein a container (18) for producing and/or storing bone substitute and/or bone reinforcing material (3) is provided with a feeding device (30) for feeding bone substitute and/or bone reinforcing material (3) out of the container (18) and into the hole (5) of the spongy bone (1) at the same time the vacuum source (9) generates a vacuum therein.

Claim 12 (Currently Amended): Device according to ~~any preceding claim, characterized in that~~ claim 1, wherein a container (18) for producing and/or storing bone substitute and/or bone reinforcing material (3) is provided with a feeding device (30) for feeding bone substitute and/or bone reinforcing material (3) into the hole (5) of the spongy bone (1) after the vacuum source (9) has generated a vacuum therein.

Claim 13 (Currently Amended): Device according to ~~claim 11 or 12, characterized in that~~ claim 11, wherein the feeding device (30) is manually operable.

Claim 14 (Currently Amended): Device according to ~~any preceding claim, characterized in that~~ claim 1, wherein the vacuum source (9) is provided to generate a vacuum of between 0,5 bar and 0,92 bar in the hole (5) of the spongy bone (1).

Claim 15 (Currently Amended): Device according to claim 14,
~~characterized in that~~ wherein the vacuum source (9) is provided to generate
a vacuum of between 0,7 and 0,8 bar in the hole (5) of the spongy bone (1).

Claim 16 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein a valve device (32) is provided to
close or interrupt the supply of bone substitute and/or bone reinforcing material (3) to
the hole (5) of the spongy bone (1) until the vacuum source (9) has generated a
suitable vacuum therein and that the valve device (32) is provided to be opened to
permit supply of bone substitute and/or bone reinforcing material (3) such that said
material can be sucked into the hole (5) of the spongy bone (1) when said suitable
vacuum has been measured therein.

Claim 17 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein at least a first and a second cannula
or needle (19, 20) are insertable into the spongy bone (1) such that they are
simultaneously directed into the hole (5) thereof and that the first cannula or
needle (19) is connected to a container (18) for producing and/or storing the bone
substitute and/or bone reinforcing material (3) while the second cannula or
needle (20) is connected to the vacuum source (9).

Claim 18 (Currently Amended): Device according to 17,
~~characterized in that~~ wherein the flushing or rinsing device (6) comprises a
rinsing agent container (16) which is connected to the first cannula or needle (19) for
leading rinsing agent (7) into the hole (5) of the spongy bone (1) through said first
cannula (19) and out of said hole (5) to the second cannula or needle (20).

Claim 19 (Currently Amended): Device according to claim 18,
~~characterized in that~~ wherein a valve device (32) is provided to either open
for supply bone substitute and/or bone reinforcing material (3) or of rinsing agent (7)
through the first cannula or needle (19).

Claim 20 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the rinsing device (6) is provided to
flush or rinse the sides (5a) of the hole (5) so that tissue material and other material
are flushed away therefrom such that depressions (5b) are formed therein, into
which the bone substitute and/or bone reinforcing material (3) can penetrate.

Claim 21 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein a vacuum source (9) is provided to
suck rinsing agent (7) through the hole (5) in the spongy bone (1).

Claim 22 (Currently Amended): Device according to claim 21,
~~characterized in that~~ wherein the vacuum source (9) for sucking rinsing
agent (7) through the hole (5) in the spongy bone (1) is the same vacuum source
which is used for sucking and/or facilitating insertion or feeding of bone substitute
and/or bone reinforcing material (3) into said hole (5).

Claim 23 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the perforating device (4) comprises
an outer tube member (11) which can be located at the spongy bone (1), and a
perforating means (12) which is movable in said outer tube member (11) in coaxial
and/or rotary direction and which includes and/or cooperates with a perforating
member (13) for making the hole (5) in the spongy bone (1).

Claim 24 (Currently Amended): Device according to claim 23,
~~characterized in that~~ wherein the perforating means (12) comprises an inner
tube member (15) for leading rinsing agent (7) into or out of the hole (5) in the
spongy bone (1).

Claim 25 (Currently Amended): Device according to ~~claim 23 or 24,~~
~~characterized in that~~ claim 23, wherein the outer or inner tube
member (11 or 15) is connected to a vacuum source (9) for sucking rinsing agent (7)
through the hole (5) in the spongy bone (1) and out of said hole through the outer
tube member (11).

Claim 26 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the perforating device (4) can be
provided with or comprises several units for making at least two holes (5) in the
spongy bone (1) either by said holes extending into each other or by having such
spongy bone (1) between them which can be penetrated by air and provided with
bone substitute and/or bone reinforcing material (3).

Claim 27 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the vacuum source (9) is an injector
pump (21) which is operated by a compressed medium.

Claim 28 (Currently Amended): Device according to claim 27,
~~characterized in that~~ wherein the injector pump (21) can be connected to a
compressed-medium device (22) which is designed as a compressed-air device
which is provided in localities in or close to which the vacuum source (9) shall be
used.

Claim 29 (Currently Amended): Device according to claim 28,
~~characterized in that~~ wherein the injector pump (21) can be connected to a
compressed-medium device (22) with commercial gas.

Claim 30 (Currently Amended): Device according to ~~claim 28 or 29,~~
~~characterized in that~~ claim 28, wherein the injector pump (21) can be
connected to a compressed-medium device (22) which can operate said pump with a
compressed-medium pressure of 4,5 - 8,5 bar.

Claim 31 (Currently Amended): Device according to ~~any of claims 1-25,~~
~~characterized in that~~ claim 1, wherein the vacuum source (9) is an
electrically operated vacuum pump.

Claim 32 (Currently Amended): Device according to ~~any of claims 1-25,~~
~~characterized in that~~ claim 1, wherein the vacuum source (9) is a pump
operated by gas.

Claim 33 (Currently Amended): Device according to ~~any of claims 1-25,~~
~~characterized in that~~ claim 1, wherein the vacuum source (9) is operated by
hand.

Claim 34 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the spongy bone (1) is a spongy
vertebra (2).

Claim 35 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the spongy bone (1) is a fracture due
to osteoporosis.

Claim 36 (Currently Amended): Device according to ~~any of claims 1-33,~~
~~characterized in that~~ claim 1, wherein the spongy bone (1) is a femoral or
knee fracture.

Claim 37 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the rinsing agent (7) is a sodium
chloride solution.

Claim 38 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the rinsing agent (7) contains a
detergent.

Claim 39 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized in that~~ claim 1, wherein the rinsing agent (7) contains at least
one trombolytic substance, e.g. heparin, streptokinase, urokinase, TPA and/or other
substances dissolving coagulum and thrombi.

Claim 40 (Currently Amended): Device according to ~~any of claims 1-35,~~
~~characterized in that~~ claim 1, wherein the rinsing agent (7) is distilled water.

Claim 41 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized by claim 1, wherein~~ a device (9 and/or 30) for imparting pulse
like suction and/or insertion movements to the bone substitute and/or bone
reinforcing material (3) into the hole (5) in the spongy bone (1).

Claim 42 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized by claim 1, wherein~~ a device (9 and/or 30) for imparting
reciprocating suction and/or insertion movements to the bone substitute and/or bone
reinforcing material (3) into the hole (5) in the spongy bone (1).

Claim 43 (Currently Amended): Device according to ~~any preceding claim,~~
~~characterized by claim 1, wherein~~ a device (9 and/or 30) for pulse like
suction and/or feeding of the rinsing agent (7) through the hole (5) in the spongy
bone (1).

Claim 44 (Currently Amended): Bone substitute and/or bone reinforcing
material which can be applied or provided in a hole (5) in spongy bone (1) in which a
vacuum is generated, ~~characterized in that~~ wherein a component forming
part of the bone substitute and/or bone reinforcing material (3) is a mineral material
or substantially mineral material or a ceramic or substantially ceramic material.

Claim 45 (Currently Amended): Bone substitute and/or bone reinforcing material according to claim 44, ~~characterized in that~~ wherein the mineral material or ceramic material is a hardenable mineral or ceramic which can be brought to harden in the spongy bone (1).

Claim 46 (Currently Amended): Bone substitute and/or bone reinforcing material according to claim 45, ~~characterized in that~~ wherein the mineral material or ceramic can be brought to harden by being mixed with a hardening agent such a water.

Claim 47 (Currently Amended): Bone substitute and/or bone reinforcing material according to ~~any of claims 44-46, characterized in that~~ claim 44, wherein the mineral material or ceramic is selected from the group comprising calcium sulphate- α -hemihydrate, calcium sulphate- β -hemihydrate, calcium sulphate-dihydrate, calcium carbonate, α -tricalcium phosphate, hydroxyapatite, dicalcium phosphate-di-hydrate, anhydrous dicalcium phosphate, tetracalcium phosphate, β -tricalcium phosphate, calcium deficient hydroxyapatite, monocalcium phosphate-monohydrate, mono-calcium phosphate, calcium-pyrophosphate, precipitated hydroxyapatite, carbonaceous apatite (dahlite), octa-calcium phosphate, amorphous calcium phosphate, oxyapatite, carbonate apatite and calcium aluminate.

Claim 48 (Currently Amended): Bone substitute and/or bone reinforcing material according to ~~any of claims 44-47, characterized in that~~ claim 44, wherein an X-ray contrast agent is mixed with the ceramic material.

Claim 49 (Currently Amended): Bone substitute and/or bone reinforcing material according to claim 48, ~~characterized in that~~ wherein the X-ray contrast agent is water soluble and non-ionic.

Claim 50 (Currently Amended): Bone substitute and/or bone reinforcing material according to claim 49, ~~characterized in that~~ wherein the water soluble, non-ionic X-ray contrast agent is selected from the group comprising iohexol, ioversol, iopamidol, iotrolan, metrizamide, iodecimol, ioglucol, ioglucamide, ioglunide, iogulamide, iomeprol, iopentol, iopromide, iosarcol, iosimide, iotusal, ioxilan, iofrotal and iodecol.

Claim 51 (Currently Amended): Bone substitute and/or bone reinforcing material which can be applied or provided in a hole (5) in spongy bone (1) in which a vacuum is generated, ~~characterized in that~~ wherein the bone substitute and/or bone reinforcing material (3) is a bone cement including the components polymer, preferably of polymethyl-methacrylate (PMMA)-type, and monomer, preferably of methylmethacrylate (MMA)-type, which components harden to bone cement after mixing with each other and feeding into the hole (5) of the spongy bone (1).

Claim 52 (Currently Amended): Bone substitute and/or bone reinforcing material according to claim 51, ~~characterized in that~~ wherein the bone substitute and/or bone reinforcing material (3) consists of mineral and/or ceramic in combination with polymer material.

Claim 53 (Currently Amended): Method for providing spongy bone with bone substitute and/or bone reinforcing material, wherein:
~~characterized in~~
~~that~~ at least one hole (5) is made in the spongy bone (1),
~~that~~ the hole (5) is flushed or rinsed with rinsing agent (7), and
~~that~~ a vacuum is generated in the hole (5) for sucking and/or facilitating insertion or feeding of the bone substitute and/or bone reinforcing material (3) into the hole (5).

Claim 54 (Currently Amended): Method according to claim 53,
~~characterized in that~~ wherein a vacuum is generated in the hole (5) for sucking rinsing agent (7) through said hole (5).

Claim 55 (Currently Amended): Method according to ~~claim 53 or 54,~~
~~characterized in that~~ claim 53, wherein the rinsing agent (7) is brought to flush tissue material and other material away from the sides (5a) of the hole (5) such that depressions (5b) are formed therein and that bone substitute and/or bone reinforcing material (3) is brought to penetrate into said depressions (5b).

Claim 56 (Currently Amended): Method for providing spongy bone with bone substitute and/or bone reinforcing material (3), which is applied or provided in at least one hole (5) in the spongy bone (1) in which a vacuum is generated, ~~characterized in that~~ wherein the bone substitute and/or bone reinforcing material (3) is brought to pulsate during its application in the spongy bone (1).

Claim 57 (Currently Amended): Method according to claim 56, ~~characterized in that~~ wherein reciprocating movements are imparted to the bone substitute and/or bone reinforcing material (3) during its application in the hole (5) in the spongy bone (1).

Claim 58 (Currently Amended): Method for providing spongy bone with bone substitute and/or bone reinforcing material (3), which is applied or provided in at least one hole (5) in the spongy bone (1) in which a vacuum is generated and wherein the hole (5) is flushed or rinsed with rinsing agent (7) before application therein of the bone substitute and/or bone reinforcing material (3), ~~characterized in that~~ wherein the rinsing agent (7) is sucked pulsatingly through the hole (5) in the spongy bone (1) by generating a pulsating vacuum in said hole (5).